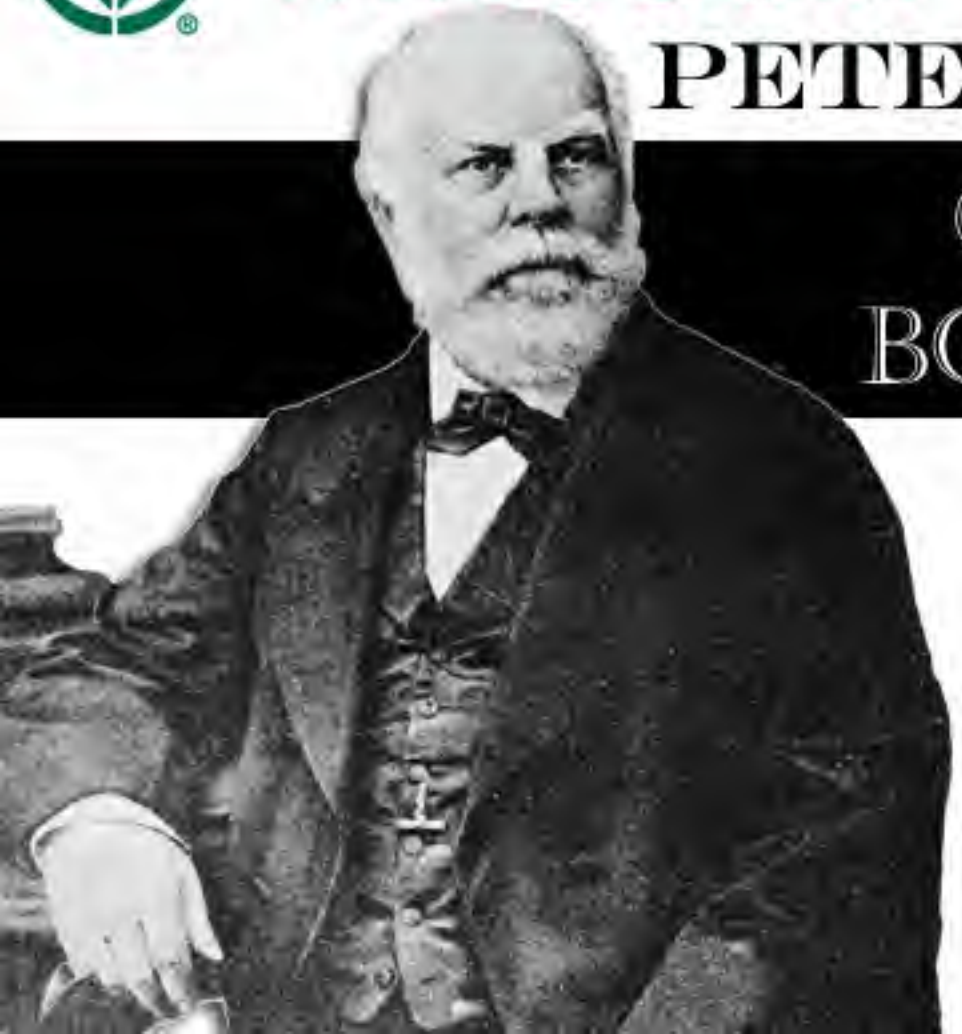
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On the Geology and Natural History of the Upper Missouri by F. V. Hayden (Botany by J. Englemann) Transactions of the Amer. Philos. Society 1863 p. 182

CHAPTER XVII.

REPTILES, FISHES, AND RECENT SHELLS.

A. Reptiles.

TESTUDINATA.	
TRIONYX,	Yellowstone river.
EMYS ELEGANS,	" "
EMYS,	Mouth of Powder river.
CISTUDO,	" " "
OPHIDIA.	
GAUDISONA LECONTEI, Cope,	Yellowstone river.
CROTALUS TERGEMINUS, Say,	" "
THAMNOPHIS SIRTALIS var. PARIETALIS, B. & G.,	Loup fork.
THAMNOPHIS HAYDENI, Cope,	Sand hills.
TROPIDONOTUS SIPEDON,	Yellowstone river.
HETERODON NASICUS, B. & G.,	Sand hills of Loup fork.
PITYOPHIS SAYI, B. & G.,	" " "
LAMPROPELTIS MULTISTRIATA, Kenn.,	Fort Benton on the Missouri.
LAMPROPELTIS SAYI, Cope,	Missouri river.
NATRIX OBSOLETA, Cope,	Missouri river to valley of the Platte.
NATRIX RHINOMEGAS, Cope,	" " " "
BASCANIUM FLAVIVENTRIS, B. & G.,	Head of Loup fork.
LIOPELTIS VENALIS, B. & G.,	Yellowstone river.
SAURIA.	
SCELOPORUS CONSOBRINUS, B. & G.,	Sand hills, valley of the Platte.
SCELOPORUS GRACIOSUS, B. & G.,	" " "
HOLBROOKIA MACULATA, Girard,	" " "
HOLBROOKIA DOUGLASII,	" " "
CNEMIDOPHORUS SEXLINEATUS, Dum., Bibr.,	" " "
PLESTIODON LEPTOGRAMMUS, Baird,	" " "
PLESTIODON MULTIVIRGATUS, Hallow.,	" " "
PLESTIODON INORNATUS, Baird,	" " "
PLESTIODON SEPTENTRIONALIS, Baird,	" " "
BATRACHIA.	
RANA HALECINA, Kalm,	
HELECETES TRISERIATUS, Max.,	Mouth of Yellowstone.
BUFO AMERICANUS, Lec.,	Along the Missouri river.
BUFO COGNATUS, Say,	" " "

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BUFO WOODHOUSEI, Grd.,	Along the Missouri river.
SIREDON LICHENOIDES,	Sand hills, valley of the Platte.
AMBLYSTOMA LURIDUM, Baird,	" " "

B. Fishes.

PERCOIDS.

STIZOSTEDION BOREUS, Girard,	Fort Union, Missouri river.

SCIAENOIDS.

HAPLOIDONOTUS GRUNNIENS, Raf.,	Milk river.

GASTERASTEOIDS.

APELTES INCONSTANS, Gill.,	Yellowstone river.

CYPRINOIDS.

PIMEPHALES FASCIATUS, Girard,	Milk river, Upper Missouri.
HYBOGNATHUS ARGYRITES, Girard,	" " "
HYBOGNATHUS EVANSI, Girard,	Fort Pierre.
RHINICHTHYS DULCIS, Gill,	Sweetwater river.
PLATYGOBIO (POGONICHTHYS, Girard) COMMUNIS, Gill,	Milk river.
GOBIO GELIDUS, Girard,	"
LEUCOSOMUS DISSIMILIS, Girard,	"
LEUCOSOMUS MACROCEPHALUS, Girard,	Fort Pierre.
NOCOMIS NEBRASCENSIS, Girard,	Sweetwater river.
SEMOTILUS SPECIOSUS, Girard,	Platte river.
PLARGYRUS BOWMANI, Girard,	Sweetwater river.

CATASTOMOIDS.

CATASTOMUS SUCKLII, Girard,	Milk river.
ACOMUS LACTARIUS, Girard,	"
ACOMUS GRISENS, Girard,	Platte river.
PTYCHOSTOMUS HAYDENI, Girard,	Yellowstone river.
CARPIODES DAMALIS, Girard,	Fort Pierre.

HYODONTOIDS.

HYODON TERGISUS, Lesueur,	Fort Sarpy, Yellowstone.

SILUROIDS.

ICTALURUS OLIVACEUS, Gill,	Yellowstone river.
NOTURUS FLAVUS, Raf.,	" "

ACIPENSEROIDS.

SCAPHYRHYNCHOPS PLATYRHYNCHUS, Gill (SCAPHYRHYNCHUS RAFINESQUII, Heckel),	Upper Missouri.

POLYODONTOIDS.

POLYODON FOLIUM, Lac.,	Fort Pierre.

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C. Recent Mollusca.

Recent shells are not abundant on the Missouri except in the streams that flow from the North. Terrestrial shells seldom occur above the mouth of the Niobrara river in a living condition. The waters of the Missouri to a point above the mouth of Milk river are so turbid that molluscous life does not exist, but in the little streams that issue from the mountains, a few *Unios* are found. The rivers that flow from the north, James, Vermilion and Big Sioux, abound with *Unionidæ*, and other freshwater shells. Vast numbers of shells are found in the alluvial deposits throughout the Northwest. In the bank of a little stream about two miles below the mouth of the Big Sioux, called Clay creek, there is a bed of shells about fifteen feet above the bed of the creek and six feet below the surface, three feet in thickness, composed almost entirely of different species of freshwater mollusca, *Unio*, *Paludina*, *Physa*, *Cyclas*, *Pupa*, very finely preserved, many of them delicate and friable, but as perfect as when living. In the alluvial just above the shells, are great numbers of bones, probably belonging to the buffalo, and over these are growing large forest trees, elm, black walnut, oak, &c. Throughout the great thickness of yellow marl, which has been deposited along the Missouri, from the Niobrara to the mouth of the former river, are disseminated large quantities of terrestrial and fluviatile shells, so far as is yet known, mostly identical with recent species. Near Fort Berthold, the fine vegetable material washed on the shores of the river contains myriads of minute *Helices*, *Pupas*, &c. From my collections in this region, Mr. Binney has described two new species of *Pupa*, *P. Nebraskana*, and *P. Blandi*. In the Black hills very few living shells were observed, but the alluvial soil composing the banks of the little streams is filled with freshwater and land shells, from which a new species, *Helix Cooperi*, was described by Mr. Binney. The freshwater shells were kindly examined by Mr. Lea of Philadelphia, and in regard to the above collection and a series obtained by Mr. Kennicott from the Red river of the North, Mr. Lea made the following remarks before the Philadelphia Academy.

"It is not to be understood that either of these collections, made under adverse circumstances, and at times of great personal danger, should be full representatives of this branch of the fauna of these countries. But they are sufficient to prove that zoological life, so far as represented by molluscs, is nearly, if not quite the same, as that of the Ohio river basin, as well as that of the Missouri river and a part of the Lower Mississippi and Red river of the South. The knowledge of a part of the species from these remote districts proves to us the wide-spread distribution of the same species, as we find every one of them in the Ohio river at Cincinnati, Marietta, and Pittsburg, and this is the more remarkable, as the waters of the Red river of the North are embraced in a different system of drainage, flowing as they do into Hudson's bay at about 52° north latitude. Here is seen an immense

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area of country producing in its waters nearly the same life as regards the molluscs, a fact highly interesting to the zoologist."

To Mr. W. G. Binney were transmitted the land shells, which were examined by him with great care. I quote the following remarks from his letter: "These shells are all of value, as they form the first contribution to our knowledge of the species found in those regions. They are, however, for the most part alluvial. *Succinea Haydeni* is the only perfectly fresh species, the animal being preserved in alcohol.

"*Helix costata* was found in myriads, probably the contribution of many small streams above. Of the previously known species it is the most interesting, having been noticed previously in few localities and in small numbers. If any argument were needed to establish the point of *H. minuta* (Say), being identical with the European *H. pulchella* (Mull.), it might be found in the fact of the ribbed variety being also found in this country."

The following catalogue comprises all the freshwater and land shells known to us on the Upper Missouri:

FLUVIATILE SHELLS.

1. Unio alatus, Say,	Big Sioux river.
2. Unio levississimus, Lea,	" "
3. Unio luteolus, Lam.,	" "
4. Unio asperimus, Lea,	" "
5. Unio rectus, Lea,	" "
6. Unio elegans, Lea,	James river.
7. Unio zigzag, Lea,	White-earth river.
8. Unio anadontoides, Lea,	James river.
9. Magaritana complanata, Lea,	Fort Clark, in Missouri.
10. Anadonta Ferussaciana, Lea,	White river, Nebraska.
11. Lymnea elodes, Say,	Mouth of Big Sioux river.
12. Lymnea Nuttalliana, Lea,	" " "
13. Lymnea humilis, Say,	" " "
14. Lymnea Haydeni, Lea,	" " "
15. Lymnea Kirtlandiana, Lea,	" " "
16. Lymnea umbrosa, Say,	Grindstone creek, Nebraska Territory.
17. Lymnea lubricoides, Lea,	" " " "
18. Lymnea Philadelphica, Lea,	" " " "
19. Planorbis bicarinatus, Say,	Mouth of Big Sioux river.
20. Planorbis trivolvis, Say,	" " "
21. Planorbis lentus, Say,	" " "
22. Planorbis parvus, Say,	" " "

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23. PLANORBIS CAMPANULATUS, Say,	Mouth of Big Sioux river.
24. PHYSA HETEROSTROPHA,	" " "
25. PHYSA INTEGRA? Hald.,	" " "
26. PHYSA ELONGATA, Say,	" " "
27. PHYSA AMPULARIA, Say,	" " "
28. PSIDIUM—?	Grindstone creek.
29. CYCLAS—?	" "
30. CYCLAS—?	" "
31. AMNICOLA PORATA, Say,	Fort Berthold.
32. AMNICOLA LAPIDARIA, Say,	"

LAND SHELLS.

33. HELIX MINUSCULA, Binney,	Council bluffs, Nebraska Territory.
34. HELIX LINEATA, Say,	" " "
35. HELIX STRIATELLA, Anthony,	" " "
36. HELIX INFLECTA, Say,	" " "
37. HELIX HIRSUTA, Say,	" " "
38. HELIX SOLITARIA, Say,	" " "
39. HELIX ALTERNATA, Say,	" " "
40. HELIX ELEVATA, Say,	" " "
41. HELIX FALLAX, Say,	" " "
42. HELIX CONCAVA, Say,	" " "
43. HELIX LIGERA, Say,	" " "
44. HELIX PROFUNDA, Say,	Near Fort Leavenworth, Kansas Territory.
45. HELIX MULTILINEATA, Say,	" " "
46. HELIX MONODON, Rackett,	" " "
47. HELIX PULCHELLA, Mull.,	" " "
48. HELIX COSTATA, Mull.,	" " "
49. HELIX ARBOREA, Say,	Drift on the Missouri near Fort Berthold.
50. HELIX CHERESINA, Say,	" " "
51. HELIX ELECTRINA, Gould,	" " "
52. HELIX COOPERI, Binney,	Black hills, Nebraska Territory.
53. PUPA NEBRASKANA, W. G. Binney,	Fort Berthold, Nebraska Ter.
54. PUPA BLANDI, W. G. Binney,	" "
55. PUPA ARMIGERA, Say,	" "
56. PUPA PENTODON, Say,	Council bluffs, "
57. PUPA MODESTA, Say,	" "
58. PUPA BADIA, Adams,	" "

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59. Bulimus lubricus, Mull.,	Fort Berthold, on Missouri.
60. Succinea venusta, Say,	Yellowstone.
61. Succinea retusa, Lea,	"
62. Succinea Haydeni, W. G. Binney,	"
63. Succinea lineata, W. G. Binney,	Fort Union and Yellowstone.
64. Succinea Nuttalliana, Lea,	Fort Union.
65. Succinea obliqua, Say,	Fort Berthold, Nebraska Ter.

CHAPTER XVIII.

BOTANY.

BY GEORGE ENGELMANN, M.D.

RANUNCULACEÆ.

Clematis Virginiana, Linn. Very abundant from the mouth of the Missouri river to Council bluffs.

Clematis ligusticifolia, Nutt. Fort Pierre to the mountains. Very abundant about Fort Union, Fort Laramie, and head of the Platte.

Pulsatilla patens, D. C. This plant is called by the Indians the harbinger of spring. I saw it on the south side of Bear Peak, March 9, 1855, just coming into bloom. It is found quite abundantly in the White river valley; also in the sandhills of Loup fork.

Anemone Pennsylvanica, Linn. Abundant from the mouth of the Missouri to the mountains, though most common below latitude 43°.

Anemone Caroliniana, Walt. Quite common around Council bluffs to Niobrara river.

Anemone cylindrica, Gray. This plant is quite rare; only a few individuals were seen near the mouth of the Big Sioux river, and on Loup fork.

Ranunculus repens var. *Marylandicus*, Torr. & Gray. Low, wet places on the Upper Missouri.

Ranunculus Pennsylvanicus, Linn. Council bluffs, Niobrara, Platte valley.

Ranunculus recurvatus, Poir. Mouth of the Missouri to Niobrara river; also sparingly in White river valley.

Ranunculus abortivus, Linn. Wet and sandy places to Niobrara; sparingly to the mountains.

Ranunculus sceleratus, Linn. Not rare throughout the Upper Missouri country.

Ranunculus glaberrimus, Hook. The only locality in which I ever saw this plant was at Grindstone hills, near Bad Lands, where it was in bloom on the 9th of April.

Ranunculus cymbalaria, Pursh. Seen on the Yellowstone and Missouri.

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Ranunculus aquatilis, Linn. Very abundant in the White river valley, in the streams, and little lakes.

Myosurus minimus, Linn. Missouri bottoms, opposite St. Joseph's; also on the upland prairie near Fort Pierre.

Aquilegia Canadensis, Linn. Does not extend above Council bluffs or the Big Sioux.

Isopyrum biternatum, Torr. & Gray. Seen sparingly as far up the Missouri as the mouth of the Platte.

Delphinium tricorne, Mich. Extends to the mouth of the Big Sioux; range to Niobrara, in latitude 43°.

Delphinium azureum, Mich. Abundant on the open prairies to the mountains.

Delphinium virescens, Nutt. Fort Pierre.

Thalictrum cornuti, Linn. Not rare to mountains.

Thalictrum dioicum, Linn. Abundant to Niobrara river.

Hydrastis Canadensis, Linn. Found only in the carboniferous limestone region to Council bluffs; perhaps rarely to Big Sioux river.

Actea rubra, Bigelow. Council bluffs.

Aconitum napellus, Linn. Laramie mountains, August 24th.

MAGNOLIACEÆ.

Liriodendron tulipifera, Linn. In Eastern Kansas.

ANONACEÆ.

Asimina triloba, Dunal. Common Papaw. Extends up the Missouri to the mouth of the Big Sioux river.

MENISPERMACEÆ.

Menispermum Canadensis, Linn. Most abundant in the limestone regions to Council bluffs; seen rarely on wooded banks to the Yellowstone.

BERBERIDACEÆ.

Berberis aquifolium, Pursh. A very abundant shrub in the Laramie range of hills and Black hills.

Podophyllum peltatum, Linn. Abundant along the lower part of the Missouri river, gradually ceasing at the mouth of the Platte.

NELUMBIACEÆ.

Nelumbeum luteum, Willd. Lower portion of the valley of the Platte, and on the broad, wet bottoms about Omaha city. It is now quite rare, on account of the great use of both roots and seeds for food by the Omaha, Otoe, and Pawnee Indians.

NYMPHEACEÆ.

Nymphea odorata, Ait. Found by Dr. Cooper in Kansas.

PAPAVERACEÆ.

Argemone Mexicana, Linn. Found only at Bellevue, Neb. Ter.; fine yellow flowers.

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Argemone hispida, Gray. Bad Lands, White river, Loup fork, Fort Laramie.

Sanguinaria Canadensis, Linn. Rich woods about Council bluffs.

FUMARIACEÆ.

Corydalos aurea, Willd. Not seen on the bottoms to mountains.

Dicentra cucullaria, D. C. In shady woods to mouth of Big Sioux.

CRUCIFERÆ.

Nasturtium palustre, D. C. Not uncommon to mountains.

Nasturtium obtusum, Nutt. On the Upper Missouri and Yellowstone.

Nasturtium sinuatum, Nutt. Fort Clark, Upper Missouri.

Nasturtium sesiliflorum, Nutt. Along Missouri.

Nasturtium limosum, Nutt. Along low bottoms near to Council bluffs.

Nasturtium calycinum,* Engelmann. N. sp. Annuum erectum seu diffusum, hirsutulum; foliis caulinis anguste oblongis sinuatis seu subpinnatifidis basi auriculata arcte sessilibus vel semi amplexicaulibus; racemis confertifloris demum elongatis; pedicellis flore flavido et silicula ovoidea acuta parva hispidula cum stylo gracilis vix longioribus; calyce persistente. In aspect as well as in the style (fully a line long on a silicle 1½ line in length), this species resembles some *Vesicariae*, but the numerous seeds are those of a *Nasturtium*. The stem is about a foot high, often much branched and diffuse. The ovate lanceolate acutish sepals commonly persist until the valves of the pod have fallen. The pubescence of the pod consists of very short and pointed thick-based simple hairs. (A. Gray.) Sandy bottoms of the Yellowstone river; Fort Sarpy to Fort Union.

Arabis Canadensis, Linn. Common along the Missouri to Fort Union.

Arabis hirsuta, Scop. Fort Union and Bad Lands.

Arabis laevigata, D. C. Shady woods to mouth of Platte.

Arabis dentata, Torr. and Gray. Council bluffs.

Sisymbrium canescens, Nutt. Fort Pierre and the Yellowstone.

Dentaria laciniata, Muhl. Shady woods around Council bluffs.

Erysimum asperum, D. C. Abundant on the high prairies to Fort Pierre and Fort Union.

Erysimum cheiranthoides, Linn. Yellowstone and Bad Lands.

Stanleya pinnatifida, Nutt. Abundant on the marl banks near Niobrara River, Fort Pierre, rarely on the Yellowstone.

Stanleya integrifolia, James. Dr. Gray thinks it is a different form of last species.

* First published in Preliminary Report of Explorations in Nebraska and Dakota, 1855, '6, and '7; Lieut. G. K. Warren, T. E. Catalogue of Plants.

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Vesicaria ludoviciana, D. C. Sterile hills, Fort Pierre and Yellowstone.
Vesicaria alpina, Nutt. Same as preceding.
Vesicaria didymocarpa, Hook. Bad Lands.
Sinapis nigra, Linn. About old houses and cultivated fields, Council bluffs and Fort Pierre.
Capsella bursa-pastoris, Linn. Same as preceding.
Draba micrantha, Nutt. Bad Lands.
Draba Caroliniana, Walt. Council bluffs.
Draba brachycarpa, Nutt. Lower Missouri.
Lepidium ruderale, Linn. Along Missouri to mountains.
Lepidium Virginicum, Linn. Fort Pierre and Yellowstone.
Lepidium intermedium, Gray. Bad Lands of the Judith, Blackfoot country.
Thelypodium integrifolium. Very abundant near saline lakes in sand hills of Loup fork.

CAPPARIDACEÆ.

Cleome integrifolia, Torr. and Gray. Bad Lands, Fort Union, Yellowstone, Bad Lands of Judith, Platte valley, Fort Laramie. Not a generally diffused plant, but growing abundantly in localities.
Polanisia uniglandulosa, Gray. First seen on gravelly hills about Fort Pierre; also on Loup fork.
Cristatella Jamesii, Torr. and Gray. Gravelly hills on Loup fork, August 1st.

VIOLACEÆ.

Viola palmata, Linn. Fort Pierre.
Viola cucullata, Sit. Fort Pierre.
Viola Nuttallii, Pursh. Bad Lands.
Viola Canadensis, Linn. Fort Pierre.
Viola tricolor, Linn. Council bluffs.
Viola delphinifolia, Nutt. Prairies around Council bluffs.

CISTACEÆ.

Helianthemum Canadense, Michx. Black hills, August 24th.
Lechea major, Michx. Sand hills, Loup fork.
Lechea minor, Lam. " "

CARYOPHYLLACEÆ.

Silene Drummondi, Hook. Loup fork.
Silene antirrhina, Linn. Council bluffs.
Silene stellata, Ait. Dixon's bluffs.
Alsine Michauxi, Fenzl. Mouth Big Sioux.
Cerastium nutans, Raf. White river, Bad Lands.

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Cerastium arvense, Linn. Council bluffs.

Moehringia lateriflora, Linn. Along Missouri to Council bluffs.

Paronychia sessiliflora, Nutt. Fort Union, Laramie peak, Black hills.

Stellaria longipes, Goldie. Council bluffs.

Arenaria Franklini, Douglass. Laramie mountains, August 24th.

Paronychia sessiliflora, Nutt. Elkhorn prairie, Bad Lands of the Judith, Blackfoot country, August 22d.

Paronychia Jamesii, Torr. Black hills, September 15th.

PORTULACACEÆ.

Portulaca oleracea, Linn. On saline clay soil, Teton river, near Fort Pierre; also near base of Black hills (indigenous).

Claytonia Virginica, Linn. Rocky woods, as high up the Missouri as Council bluffs.

Talinum parviflorum, Nutt. Sand hills on Loup fork.

MALVACEÆ.

Abutilon Avicennae, Gaertn. Naturalized near Council bluffs.

Malvastrum coccineum, Gray. Makes its appearance on the Missouri about latitude 43°, and continues to the mountains.

Callirhoe macrorhiza, Gray. Loup fork, July 22d.

Callirhoe involucrata, Gray. Platte river.

TILIACEÆ.

Tilia Americana, Linn. Abundant to Big Sioux; seen sparingly to mouth of Niobrara river, where it ceases.

LINACEÆ.

Linum rigidum, Pursh. Throughout the prairie portion of the Upper Missouri.

Linum perenne, Linn. Fort Pierre and Fort Union.

Linum Bootti, Planchon. Found by Dr. Cooper in Kansas.

GERANIACEÆ.

Geranium caespitosum, James. Black hills and Laramie mountains.

Geranium maculatum, Linn. Common to Niobrara.

Geranium Carolinianum, Linn. Mouth of Big Sioux.

OXALIDACEÆ.

Oxalis stricta, Linn. Generally diffused.

Oxalis violacea, Linn. Rich prairies and cultivated fields around Council bluffs; seen nearly as high as Niobrara in full bloom, June 20th, 1857.

Oxalis corniculata, Linn. Upper Missouri.

BALSAMINACEÆ.

Impatiens pallida, Nutt. Shady woods to mountains.

Impatiens fulva, Nutt. Council bluffs and Big Sioux.

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RUTACEÆ.

Xanthoxylum Americanum, Mill. Woody bottoms and islands of the Missouri, to Fort Pierre.

Ptelia trifoliata, Linn. Around Council bluffs.

ANACARDIACEÆ.

Rhus glabra, Linn. Council bluffs, White river valley.

Rhus copallina, Linn. Abundant in Missouri and Kansas.

Rhus toxicodendron, Linn. Abundant in woody places to the mountains.

Rhus aromatica, Ait. Along Missouri.

Rhus trilobata, Nutt. First makes its appearance about latitude 43°, and occurs abundantly on sterile hills to the mountains.

VITACEÆ.

Vitis cordifolia, Michx.

Vitis riparia, Michx. Banks of Missouri, Bellevue, N. T.

Vitis indivisa, Willd. Big Sioux river.

Ampelopsis quinquefolia, Michx. Very common in woody bottoms throughout the country, but grows most luxuriant in the rich woods from the mouth of the Missouri to Big Sioux, where it often so clothes old dry trees that they seem still alive.

RHAMNACEÆ.

Ceanothus Fendleri. Laramie mountains.

Ceanothus velutinus, Douglas. Black hills.

Ceanothus sanguineus, Pursh. Mouth of White river.

Ceanothus ovalis, Bigelow, var. *pubescens*. Common on the cretaceous hills below Fort Pierre; also in the sand hills of Loup fork, on the Niobrara river.

Rhamnus lanceolatus, Pursh. Council bluffs.

CELASTRACEÆ.

Celastrus scandens, Linn. Along Missouri to Fort Union.

Euonymus atropurpureus, Jacq. Woody bottoms to Fort Union.

Euonymus Americanus, Linn. Mouth of Platte.

SAPINDACEÆ.

Staphylea trifolia, Linn. Council bluffs.

Aesculus glabra, Willd. Missouri bottoms to Big Sioux river.

Acer glabrum, Torr. Laramie mountains, August 24th.

Acer dasycarpum, Ehrhart. Bellevue, Nebraska.

Acer rubrum, Linn. Highest limit on Missouri, latitude 42°.

Acer saccharinum, Wang. Limestone regions of Kansas and southern portion of Nebraska.

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Negundo aceroides, Moench. One of the few trees which extend to the mountains.

POLYGALACEÆ.

Polygala alba, Nutt. On sterile hills to Fort Union.

Polygala verticillata, Linn. Moist places on prairies, Fort Pierre, Bad Lands.

Polygala senega, Linn. Council bluffs.

LEGUMINOSÆ.

Vicia Americana, Muhl. Upper Missouri generally.

Lathyrus linearis, Nutt. Upper Missouri generally.

Lathyrus polymorphus, Nutt. White river valley.

Lathyrus venosus, Muhl. Rich bottoms, Big Sioux.

Phaseolus pauciflorus, Benth. Bad Lands.

Amphicarpæa monoica, Nutt. White river valley, Fort Clark.

\# *Apios tuberosa*, Moench. Along sandy woody bottoms of Missouri. A species of mouse gathers large numbers of the tubers of this plant for his winter store. These "cachés" (as they are called) are eagerly sought by the squaws, and the tubers taken and used as food. I have seen several bushels of the roots in a single lodge. Cooked with buffalo meat they make a very palatable dish.

Glycyrrhiza lepidota, Nutt. Diffused generally.

Psoralea lanceolata, Pursh. From Bellevue to Yellowstone.

Psoralea floribunda, Nutt. Big Sioux river to Bad Lands.

Psoralea campestris, Nutt. Bad Lands.

Psoralea argophylla, Pursh. A most beautiful plant, covering the plains as with silvery velvet. Big Sioux to mountains.

Psoralea cuspidata, Pursh. Fort Pierre to Bad Lands.

Psoralea esculenta, Pursh. Affords the Indians a very nourishing farinaceous root, upon which they subsist almost entirely in the spring and early summer months, when game is scarce. It is also a great favorite of the grizzly bear.

Psoralea digitata, Nutt. Sand hills on Loup fork.

Amorpha fruticosa, Linn. A common shrub, above Missouri to mountains.

Amorpha canescens, Nutt. Very abundant on the upland prairies, Loup fork, and Niobrara river.

Amorpha nana, Nutt. Fort Laramie and high up the Missouri.

Dalea aurea, Nutt. Bad Lands.

Dalea alopecuroides, Willd. Big Sioux river.

Dalea laxiflora, Pursh. Fort Pierre to the Yellowstone.

Petalostemum candidum, Mich. Big Sioux river.

Petalostemum multiflorum, Nutt. Fort Pierre to Bad Lands.

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Petalostemum violaceum, Mich. Upper Missouri to Bad Lands.
Petalostemum villosum, Nutt. Bad Lands; also sand hills on Loup fork.
Petalostemum macrostachyium, Torr. Sand hills along the Loup fork and Niobrara.
Trifolium stoloniferum, Muhl. Bad Lands.
Trifolium pratense, Linn. Lower Missouri.
Trifolium repens, Linn. Lower Missouri.
Hosackia Purshiana, Benth. Sandy bottoms of Missouri.
Astragalus hypoglottis, Linn. White river to Bad Lands.
Astragalus gracilis, Nutt. Bad Lands to the Yellowstone.
Astragalus striatus, Nutt. Fort Pierre to Bad Lands, covering prairies like clover fields.
Astragalus Missouriensis, Nutt. Fort Pierre to Fort Union.
Astragalus caryocarpus, Ker. Fort Pierre to Bad Lands.
Astragalus Plattensis, Nutt. Fort Pierre.
Astragalus Canadensis, Linn. Fort Pierre to Bad Lands.
Astragalus racemosus, Pursh. Abundant in the sandy bottoms of Missouri; Cedar island.
Astragalus mollissimus, Torr. Niobrara river, August 18th.
Astragalus Drummondi, Douglass. Sterile hills around Fort Union.
Astragalus adsurgens, Pall. James river.
Phaca caespitosa, Nutt. Bad Lands.
Phaca longifolia, Nutt. Bad Lands.
Phaca pectinata, Hook. Upland prairies on the Yellowstone river; abundant.
Phaca elongata, Hook. Fort Pierre to Fort Union.
Phaca bisulcata, Hook. Fort Union.
Orytropis Lamberti, Pursh. Very abundant on prairies around Big Sioux and Niobrara rivers.
Oxytropis splendens, Douglass. James river.
Homalobus multiflorus, Nutt. Big Sioux to Bad Lands.
Kentrophyta montana, Nutt. Abundant in sandy river-bottoms on the Yellowstone.
Hedysarum boreale, Nutt. Abundant; mouth of Yellowstone.
Desmodium Canadense, D. C. Fort Clark.
Desmodium Dillenii, Darl. Big Sioux river.
Desmodium paniculatum, D. C. Bellevue, W. T.
Desmodium nudiflorum, D. C. Bellevue, W. T.
Lespedeza capitata, Michx. Abundant on the rich bottoms about Council bluffs, Big Sioux.
Lespedeza hirta, Ell. On Missouri.

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Crotalaria sagittalis, Michx. Big Sioux river.
Lupinus pusillus, Pursh. Common on the Yellowstone.
Lupinus ornatus, Douglass. Niobrara river, August 18th.
Lupinus decumbens, Torr. Laramie mountains, August 24th.
Tilia Americana, Linn. Abundant to Big Sioux; seen sparingly to mouth of Niobrara, where it ceases.
Lupinus perennis, Linn. Platte valley.
Lupinus—? Bad Lands of the Judith.
Thermopsis rhombifolia, Nutt. From Council bluffs to Fort Pierre; Bad Lands, &c.
Sophora sericea, Nutt. White river valley; Fort Pierre.
Gleditschia tricanthus, Linn. Occurs as high on the Missouri as Big Sioux.
Cercis Canadensis, Linn. Same as preceding.
Cassia Chaemacrista, Linn. Sandy bottoms of Missouri, from Council bluffs to White river.
Desmanthus brachylobus, Benth. Council bluffs and Platte valley; rich bottoms.
Schrankia uncinata, Willd. Gravelly hills on the Upper Missouri generally.
Gymnocladus Canadensis, Lam. Abundant in woody bottoms to Big Sioux.
Baptisia leucophea, Nutt. Platte valley.
Baptisia leucantha, Torr. and Gray. Lower Platte river, June 25th.

ROSACEÆ.

Prunus Americana, Marsh. Fort Pierre.
Prunus pumila, Linn. Abundant in the sand hills of Loup fork; along Missouri river near Little Soldier's camp.
Prunus serotina, Ehrh. Council bluffs.
Prunus Virginiana, Linn. Generally diffused.
Gillenia stipulacea, Nutt. Mouth of Big Sioux.
Gillenia trifoliata, Moench. Mouth of Big Sioux.
Agrimonia eupatoria, Linn. Bellevue, N. T.
Agrimonia parviflora, Ait. Around Fort Union.
Spiræa opulifolia var. *pauciflora*. Black hills, September 3d.
Spiræa betulafolia var. *corymbosa*. " "
Cercocarpus parvifolius, Michx. Laramie mountains, August 20th.
Horkelia Gordoni. Laramie mountains.
Chaemorhodas erecta, var. *Nuttalli*, Torr. and Gray. Big Bend and Yellowstone.
Geum strictum, Ait. White river to Yellowstone.
Geum album, Gmel. Fort Pierre and Mandan village.
Geum triflorum, Pursh. Fort Union.

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Geum rivale, Linn. Laramie mountains.
Potentilla glandulosa, Nutt. Laramie mountains, August 24th.
Potentilla Norvegica, Linn. Council bluffs to Yellowstone.
Potentilla paradoxa, Nutt. Along banks of Missouri.
Potentilla effusa, Dougl.? Prairie near Fort Clark.
Potentilla Pennsylvanica, Linn, var. *strigosa*. Bad Lands.
Potentilla diversifolia, Lehm. Bad Lands.
Potentilla rigida, Nutt. Yellowstone.
Potentilla Canadensis, Linn. Big Sioux river.
Potentilla anserina, Linn. Niobrara river to Fort Pierre.
Potentilla fruticosa, Linn. On the Yellowstone.
Potentilla arguta, Pursh. Fort Clark and Fort Union.
Sibbaldia procumbens, Linn. Laramie mountains, August 24th.
Fragaria vesca, Linn. Along Missouri to Yellowstone.
Fragaria Virginica, Ehsh. Fort Union.
Sanguisorba annua, Nutt. Fort Union.
Rubus occidentalis, Linn. Council bluffs.
Rubus strigosus, Mich. Sparingly on Yellowstone.
Rubus villosus, Ait. Council bluffs.
Rosa blanda, Ait. On prairies generally.
Rosa lucida, Ehrh. White river; Fort Pierre.
Cratægus punctata, Jacq. White river; Big Bend, &c.
Cratægus tomentosa, var *mollis*, Gray. Mouth of Big Sioux.
Amelanchier Canadensis, Torr. and Gray. Common throughout the Upper Missouri country; bears a delicious fruit, which ripens in June.

LYTHRACEÆ.

Lythrum alatum, Pursh. Rich alluvial bottoms, Platte valley, June 3d.

ONAGRACEÆ.

Epilobium minutum, Lindl. Black hills, September 10th.
Epilobium angustifolium, Linn. Not uncommon in Kansas; also near Council bluffs.
Oenothera pinnatifida, Nutt. Bad Lands to Yellowstone.
Oenothera albicaulis, Nutt. Same localities.
Oenothera caespitosa, Nutt. Bad Lands, &c.; the common form with large flowers, and another one with flowers not more than one inch in diameter.
Oenothera montana, Nutt. Yellowstone; a small pubescent form of the latter?
Oenothera coronopifolia, Torr. and Gray. Niobrara, August 15th.
Oenothera serrulata, Nutt. Fort Pierre, and through the whole region in different varieties.

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Oenothera biennis, Linn. Common along the valley of the Missouri to the mountains.
Oenothera rhombipetala, Nutt. Sand hills, August 4th.
Oenothera lavandulaefolia, Torr. and Gray. Niobrara river, August 15th.
Oenothera spinulosa, var. *Drummondii*. Loup fork of the Platte, July.
Gayophytum ramossissimum, Torr. and Gray. Black hills, September 10th.
Ludwigia palustris, Ell. Wet places in Platte valley, near mouth of Loup fork.
Gaura coccinea, Nutt. Throughout the territory; different forms, canescent. Very small-leaved, or almost glabrous, with larger leaves.
Gaura parviflora, Dougl. Bad Lands and Yellowstone country.
Gaura biennis, Linn. Along Missouri river to Council bluffs.
Circea Lutetiana, Linn. Bad Lands.
Myriophyllum spicatum, Linn. Common in ponds throughout the Upper Missouri.
Hippuris vulgaris, Linn. In standing pools, Upper Missouri.

LOASACEÆ.

Mentzelia ornata, Torr. & Gray. Common on bluffs about Fort Pierre.
Mentzelia nuda, Torr. & Gray. Bad Lands.

CACTACEÆ.

Mamillaria vivipara, Haw. From the mouth of White river to the Yellowstone. In the bottom lands it forms large cæspitose masses, but on the arid hills along the Yellowstone a simple depressed variety is noticed; both belong to the subspecies which I have named *vera*, and the latter may be distinguished as var. *simplex*.

Mamillaria Nuttalli, Engl., *forma borealis*, Cactus mamillaris, Nutt., Mam. simplex, Torr. & Gray. On White river, Fort Pierre, &c.

Opuntia Rafinesqui, var. *fusiformis*, Engl. & Big. Near Big Bend of the Missouri, below Fort Pierre.

Opuntia Missouriense, D. C. Different forms noticed in the Synopsis of the Cactaceæ of the United States. (Proceedings Am. Acad. vol. iii, 1856.) a, *rufispina*; b, *platycarpa*; c, *microsperma*; d, *subinermis*. Found all over the territory explored by the Expeditions. Durion's hills was about the most eastern locality of this species.

Opuntia fragilis, Nutt. D. C. Bad Lands to Yellowstone. This species is very nearly allied to the last, and not to the glomerate *Opuntiæ*, with which it is usually united. It is seldom found in flower or fruit, being abundantly propagated by the fragile joints which even the wind breaks and scatters. The fruit is at first fleshy, and becomes dry only at last, while the fruit of *Opuntia Missouriensis* becomes dry and papery as soon as ripe.

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GROSSULACEÆ.

Ribes hirtellum, Michx. On Powder river, on rocks; a spineless, small-leaved form.

Ribes oxyacanthoides, Linn. On the Yellowstone.

Ribes floridum, L'Her. Abundant about Fort Pierre, &c., and all along the Missouri.

Ribes aureum, Pursh. With the last.

Ribes rotundifolium, Michx. Niobrara river, June 5th.

Ribes Missouriense, Nutt. Only a variety of the last.

CUCURBITACEÆ.

Echinocystis lobata, Torr. & Gray. Durion's hills, on the Missouri.

CRASSULACEÆ.

Sedum stenopetalum, Pursh. Laramie mountains.

Penthorum sedoides, Linn. In wet places. Platte valley; Loup fork.

SAXIFRAGACEÆ.

Heuchera hispida, Pursh. Fort Pierre to Yellowstone.

Heuchera Americana, Linn. Not rare in woody places along the Missouri.

Heuchera Richardsonii, R. Brown. Black hills.

HAMAMELACEÆ.

Hamamelis Virginica, Linn. Abundant in limestone woods along the Missouri to mouth of the Platte river.

UMBELLIFERÆ.

Sanicula Canadensis, Linn. Bellevue, N. T. June 20th.

Sanicula Marilandica, Linn. Council bluffs to Fort Mandan.

Sium lineare, Michx. Moist places from the mouth of the Missouri to mountains.

Sium angustifolium, Linn. Council bluffs.

Thaspium barbinode, Nutt. Rich woody places along the Missouri.

Thaspium aureum, Nutt. Near Council bluffs.

Cicuta maculata, Linn. Sargent's bluffs, Mandan village, &c.

Cymopterus glomeratus, D. C. Mouth of White river, and Bad Lands.

Cymopterus montanus, Nutt. Bad Lands.

Peucedanum foeniculaceum, Nutt. Common on high prairies around Council bluffs.

Peucedanum carnifolium, Torr. & Gray. Niobrara river.

Peucedanum nudicaule, Nutt. White river valley; in flower about the middle of April.

Osmorrhiza longistylis, D. C. Council bluffs to Niobrara.

Osmorrhiza brevistylis, D. C. Council bluffs.

Musenium divaricatum, Nutt. Fort Pierre, Bad Lands, &c.

Leptocaulis patens, Nutt. Loup Fork.

ARALIACEÆ.

Aralia nudicaulis, Linn. Bellevue, N. T.

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CORNACEÆ.

Cornus florida, Linn. Along the rich wooded bottoms as far as Fort Leavenworth.

Cornus stolonifera, Michx. Wooded bottoms of Missouri from mouth to source.

Cornus sericea, Linn. Abundant along Missouri bottoms. The inner bark is much used by the Sioux Indians with their tobacco in proportion of three to one; called by them the "red osier."

CAPRIFOLIACEÆ.

Symphoricarpus occidentalis, R. Br. The most abundant shrub along the rivers and streams from the mouth of the Missouri to the mountains; often called "blue wood;" much used for making brooms; sometimes covers the river bottoms almost exclusively.

Lonicera hirsuta, Eat. Bellevue.

Triosteum perfoliatum, Linn. Not rare as high up the Missouri as mouth of Big Sioux.

Sambucus Canadensis, Linn. Common along Missouri; seen in the valley of Yellowstone.

Viburnum Lentago, Linn. Fort Union, Blackfoot country.

RUBIACEÆ.

Galium aparine, Linn. Kansas river.

Galium trifidum, Linn. Council bluffs.

Galium triflorum, Michx. Fort Pierre, Fort Union, &c.

Galium asprellum, Michx. Council bluffs.

Galium circaezans, Michx. Bellevue, N. T.

Galium boreale, Linn. Fort Clark, Fort Union.

Oldenlandia angustifolia, Gray. Along Missouri to Council bluffs.

Oldenlandia purpurea, Gray. Bellevue, N. T.

COMPOSITÆ.

Vernonia fasciculata, Michx. Quite common on prairies, valley of Missouri.

Kuhnia eupatoroides, Linn. Council bluffs to Niobrara.

Eupatorium perfoliatum, Linn. On rich bottom prairies near mouth of Big Sioux.

Eupatorium purpureum, Linn. Council bluffs to James river.

Eupatorium ageratoides, Linn. Woody bottoms Council bluffs to Fort Pierre.

Eupatorium serotinum, Michx. Bellevue, N. T.

Liatris squarrosa, Willd. A smoothish and a rough hairy form; prairies in Kansas and Nebraska, common; root tuberous.

Liatris punctata, Hook. Common on prairies along the Yellowstone; root ligneous, elongated, horizontal.

Liatris pycnostachya, Michx. Common on prairies. Bellevue, N. T.

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Liatris scariosa, Willd. Western prairies, abundant.

Pectis angustifolia, Torr. North Platte.

Brickelia grandiflora, Nutt. Laramie mountains, August 24th.

Machœranthera tanacetifolia, Nees. On Powder river, Yellowstone, and Bad Lands of the Judith.

Machœranthera canescens, Gray. (*Aster canescens*, Pursh.) Along the Missouri, at the mouth of the Big Shyenne, at Fort Clark, &c.

Machœranthera viscosa (*Dicteria viscosa*, Nutt.). Common in prairie dog villages on the Yellowstone river; only the lowest leaves are sharply and divaricately toothed, all others are linear and entire; the plant is annual or biennial, six to ten inches high, divaricately branched, the heads much smaller than in the foregoing species.

Aster cordifolius, Linn. Not uncommon, Big Sioux and Niobrara.

Aster saggitifolius, Willd. Big Sioux and Niobrara.

Aster azureus, Lindl. Council bluffs.

Aster multiflorus, Ait. Council bluffs.

Aster sericeus, Vent. Fort Pierre.

Aster Novæ-Angliæ, Ait. Low places on Missouri.

Aster lævis, Linn. Upper Missouri.

Aster ptarmicoides, Nees. Black hills.

Aster angustus, Torr. & Gray. Bad Lands of Judith.

Aster pauciflorus, Nutt. Near Fort Union, September.

Aster simplex, Willd. Shyenne river, September 3d.

Aster glacialis, Nutt. Laramie mountains, August 24th.

Townsendia grandiflora, Nutt. Eagle Nest butte, White river.

Erigeron pumilum, Nutt. High hills around Fort Pierre.

Erigeron strigosum, Muhl. Low places, Vermilion prairie.

Erigeron Philadelphicum, Linn. Alluvial bottoms of Missouri.

Erigeron Canadense, Linn. Common all over Missouri country.

Erigeron compositum, Pursh. Sterile hills at Fort Union, without flower or fruit.

Erigeron glabellum, Nutt. Prairies around Fort Pierre and the Yellowstone.

Erigeron bellidiastrum, Nutt. Niobrara river, August 12th.

Erigeron macranthum, Nutt. Black hills, September 10th.

Aplopappus Nuttalli, Torr. and Gray. Bad Lands.

Aplopappus lanceolatus. Fort Union.

Aplopappus spinulosus, D. C. High prairies of the Upper Missouri.

Boltonia glastifolia, L'Her. Bellevue, N. T.

Gutiernezia Euthamiae, Torr. and Gray. Yellowstone country; also Black hills. A smoothish and a scabrous form.

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Solidago rigida, Linn. Bellevue to the Yellowstone.

Solidago incana, Torr. and Gray. Fort Pierre to Yellowstone.

Solidago Missouriensis, Nutt. Bellevue to Fort Pierre.

Solidago gigantea, Ait. Common along the Missouri and Yellowstone.

Solidago speciosa, Nutt. Black hills, September 3d.

Grindelia squarrosa, Dunal. Common on high prairies from latitude 43° to the mountains; medicinal among Indians.

Chrysopsis villosa, Nutt. Common on dry hills, Fort Pierre.

Chrysopsis hispida, Hook. Bad Lands and Yellowstone.

Diaperia prolifera, Nutt. Common on Yellowstone.

Silphium laciniatum, Linn. Called by the inhabitants of the country, "Compass plant;" reaches its healthiest growth on the rich fertile bottoms of Missouri, but often found in great abundance on the high prairies. The highest point on the Missouri river that I have observed this plant, is near latitude 44°, mouth of White river; most abundant in the Platte valley, and on the broad rich bottoms between Council bluffs and Niobrara river, where it sometimes occupies large areas to the exclusion of other vegetation. That the leaves of this plant set their edges north and south, may be proved by a pocket compass. Forty-nine plants out of fifty exhibit this peculiarity. It thus becomes an excellent guide to the traveller across the pathless prairies.

Silphium integrifolium, Michx. Bellevue, N. T.

Silphium perfoliatum, Linn. Seldom seen above the mouth of Niobrara river.

Euphrosyne xanthifolia, Gray. Yellowstone and Upper Missouri in bottoms; a green and canescent form.

Iva axillaris, Pursh. Dry argillaceous hills. Fort Pierre and Fort Union.

Ambrosia trifida, Linn. Along streams and borders of woods, from mouth of Missouri to mountains. Quite abundant.

Ambrosia coronopifolia, Torr. and Gray. Fort Pierre.

Franseria Hookeriana, Nutt. Sandy bottoms of Yellowstone river.

Heliopsis laevis, Pers. Along streams in Kansas and Nebraska to Fort Pierre.

Xanthium strumarium, Linn. Sandy bottoms of Yellowstone.

Echinacea purpurea, Moench. Purple cone flower, called Rattlesnake Weed in the West, and is found abundantly throughout the country. Root very pungent. Used very effectively by the traders and Indians for the cure of the bite of the rattlesnake.

Echinacea angustifolia, D. C. Fort Pierre, Bad Lands, Yellowstone. Mostly very hispid; hoary.

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Lepachys columnaris, Torr. and Gray. Common throughout the Missouri country, but most abundant from Council bluffs to Niobrara river, on the rich broad bottom prairies. In flower, July 8th. Rays usually yellow, sometimes of a deep purple velvet.

Lepachys pinnata, Torr. and Gray. Vermilion prairie. Rare.

Rudbeckia hirta, Linn. Council bluffs.

Helianthus petiolaris, Nutt. Common from Sargent's bluffs to Fort Union.

Helianthus rigidus, Defs. From Bellevue to Yellowstone.

Helianthus lenticularis, Dougl. Fort Pierre. Abundant in Indian cornfields at Fort Mandan.

Helianthus Maximiliani, Schrad. Fort Pierre to Fort Union.

Helianthus hirsutus, Raf. Big Sioux river.

Coreopsis palmata, Nutt. Bellevue, N. T.

Bidens bipinnata, Linn. Bellevue, N. T.

Bidens chrysanthemoides, Michx. Yellowstone river.

Balsamorrhiza sagittata, Nutt. Black hills.

Linosyris viscidiflora, Torr. and Gray. Fort Union.

Linosyris graveolens, Torr. & Gray. Sterile hills on the Yellowstone; very common; also Bad Lands; the larger glabrous, and the smaller a stinted canescent form.

Thelesperma filifolia, Gray. Platte valley, July 30th.

Thelesperma gracile, Gray. Sand hills, July 24th.

Dysodia chrysanthemoides, Michx. On the Yellowstone.

Gaillardia aristata, Pursh. Fort Union.

Hymenopappus tenuifolius, Pursh. Big Sioux to Fort Union and Bad Lands.

Bahia appositifolia, Nutt. Common on roadsides and in prairie dog villages, from Fort Pierre to Bad Lands and to the Yellowstone.

Actinella acaulis, Nutt. On high sterile hills, Bad Lands, and Yellowstone.

Actinella Richardsoni, Nutt. Fort Union.

Actinella lanata, Nutt. Niobrara river. a form of A. acaulis Nutt.

Helenium autumnale, Linn. Kansas and Southern Nebraska.

Anthemis arvensis, Linn. Naturalized to Fort Leavenworth.

Achillea millefolium, Linn. Found all over the prairie country of the West; must be indigenous west of the Mississippi.

Antennaria plantaginea, R. Br. Upper Missouri and Black hills.

Antennaria dioica, Gaertn. Fort Pierre to Yellowstone.

Antennaria margaritacea, R. Br. Laramie mountains.

Antennaria dimorpha, Nutt. Bad Lands.

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Gnaphalium uliginosum, Linn. Council Bluffs.

Artemisia longifolia, Nutt. Common on high hills along the Yellowstone.

Artemisia dracunculoides, Pursh. Bellevue to Yellowstone.

Artemisia filifolia, Torr. Gravelly hills along the Platte; Bad Lands.

Artemisia Canadensis, Michx. Near Fort Laramie; also Durion's hills to Yellowstone.

Artemisia Ludoviciana, Nutt. In the Bad Lands and along the Yellowstone; always white, with deeply serrate or entire leaves.

Artemisia cana, Pursh. Abundant on the Yellowstone, and on the Missouri above Fort Union. This is the species which is properly called "sage" on the Upper Missouri; it grows shrubby, two to four feet high.

Artemisia frigida, Willd. From latitude 43° to mountains.

Artemisia tridentata, Nutt. Common in Bad Lands.

Artemisia biennis, Willd. In Platte valley.

Senecio aureus, Linn. Council bluffs and Big Sioux.

Senecio integerrimus, Nutt. About Council bluffs to mountains.

Senecio lobatus, Pers. Fort Leavenworth to Fort Pierre.

Senecio canus, Hook. Bad Lands to Yellowstone, with the upper leaves serrate or entire, tomentose, canescent or almost glabrous.

Senecio filifolius, Nutt. Black hills.

Senecio spartioides, Torr. & Gray. Niobrara river.

Senecio rapifolius, Nutt. Laramie mountains.

Senecio eremophilus, Richards. Black hills.

Cacalia atriplicifolia, Linn. Bellevue, N. T.

Cacalia tuberosa, Nutt. Not uncommon on the rich bottoms of the Missouri and Platte.

Lygodesmia juncea, Don. A very abundant plant all over the sterile hills of the Upper Missouri and its tributaries; grows most luxuriantly on the second upland prairie. It makes its first appearance near Council bluffs, and extends to the mountains.

Cirsium altissimum, Spreng. Bellevue to Fort Pierre.

Cirsium undulatum, Spreng. Arid hills and prairies from Niobrara to Fort Pierre and Bad Lands. The var. β. Torr. & Gray, with smaller heads and more deeply divided and spiny leaves, was found on the Yellowstone.

Cirsium canescens, Nutt. Bad Lands; certainly biennial with a long root; perhaps belonging to *C. undulatum*, as Torr. & Gray suggest; distinguished by the deeply pinnatifid and decurrent leaves; decurrent part $\frac{1}{2}$–$1\frac{1}{2}$ inch long, undulate and very spiny; peduncles leafy; involucre pubescent.

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Nabalus asper, Torr. & Gray. Bellevue, N. T.

Nabalus racemosus, Hook. Black hills, September 3d.

Mulgedium pulchellum, Nutt. Big Sioux river.

Troximon cuspidatum, Pursh. Council bluffs and Big Sioux, Bad Lands. The white tomentose margin on the bright green leaves gives the young plant especially a very peculiar aspect.

Troximon glaucum, Nutt. Upland prairies on the Yellowstone, with long and short leaves, villous or glabrous scales of involucre.

Crepis runcinata, Torr. & Gray. Yellowstone.

Lactuca Ludoviciana, D. C. Fort Mandan (Nuttall's original locality), Bad Lands, down to the mouth of the Big Sioux river. A very distinct and well-marked species and a true *Lactuca*. Apparently biennial or perennial; 1–3 feet high; cauline leaves oval, runcinate or almost entire, clasping with an auriculate base; heads paniculate, much larger than in any other North American species, about 9 lines long.

Sonchus asper, Vill. Fort Leavenworth, K. T.

Stephanomeria runcinata. Bad Lands of Judith.

Villanova chrysanthemoides, Gray. *Plantæ Wrightiana*, Plate 2. Laramie mountains, August 24th.

Hieracium scabrum, Michx. Laramie mountains.

Hieracium Canadense, Michx. Laramie mountains.

LOBELIACEÆ.

Lobelia cardinalis, Linn. Moist places along the Missouri to the Big Sioux; in Kansas, on Big Cottonwood creek.

Lobelia spicata, Lam. Mouth of the Platte.

Lobelia inflata, Linn. Yellowstone valley, where it is cultivated by the Crow Indians, and used in their religious ceremonies.

CAMPANULACEÆ.

Campanula rotundifolia, Linn. Prairies near Fort Clark; abundant, but very rare elsewhere.

Campanula aparinoides, Pursh.

Specularia perfoliata, A. D. C. Bad Lands, &c.

Specularia paradoxa, Nutt. (*Sub prismato carpo.*) Bad Lands.

ERICACEÆ.

Vaccinium Myrtillus, Hook. Black hills.

Arctostaphylos Uva-ursi, Spreng. Very abundant on the high rocky hills about Fort Clark; also abundant in the mountains. It is the real "Kininkkinnick" of the

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Indians, and used by them to mix with their tobacco, in preference to any other plant. The bark of *Cornus sericea* is used as a substitute only in the absence of the *A. uva-ursi.*

Chimaphila umbellata, Nutt. Black hills.

Pyrola minor, Linn. Laramie mountains, August 20th.

Pterospora Andromedea, Nutt. Laramie mountains.

EBENACEÆ.

Diospyros Virginiana, Linn. Occurs in Kansas.

PLANTAGINACEÆ.

Plantago major, Linn. Along Missouri and Yellowstone rivers.

Plantago eriopoda, Torr. Saline marshes near Fort Union.

Plantago Virginica, Linn. Fort Pierre.

Plantago Patagonica, var. *gnaphalioides.* Very abundant in sandy soil and gravelly places on the Upper Missouri.

Plantago pusilla, Nutt. On prairies near Fort Pierre; also on the river opposite St. Joseph, in Kansas.

PRIMULACEÆ.

Androsace occidentalis, Pursh. Bad Lands, Fort Pierre.

Lysimachia stricta, Ait. Platte valley, and along Missouri.

Lysimachia ciliata, Linn. Common from Council bluffs to Bad Lands.

Glaux maritima, Linn. Bad Lands of the Judith, Blackfoot country.

BIGNONIACEÆ.

Martynia proboscidea, Glox. Fort Pierre.

LENTIBULACEÆ.

Utricularia inflata, Walt. In ponds, Council bluffs, White river valley.

OROBANCHACEÆ.

Phelipœa Ludoviciana, Don. Sandy prairies, Yellowstone.

Aphyllon fasciculatum, Torr. & Gray. Great Bend of Missouri.

Aphyllon uniflorum, Torr. & Gray. Council bluffs.

SCROPHULARIACEÆ.

Scrophularia nodosa, Linn. Common in prairies throughout the Upper Missouri country.

Scrophularia nodosa, var. *discolor.* Smaller, with firmer leaves, lower side of leaves pubescent and very pale; Fort Pierre.

Chelone glabra, Linn. Along valley of Missouri to latitude 43°.

Pentstemon grandiflorus, Fraser. A beautiful plant found along the bluffs of the Platte, banks and sandy bottoms of Missouri to mountains.

Pentstemon cœruleum, Nutt. Eagle Nest hill, White river valley.

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Pentstemon erianthum, Nutt. Hills around Fort Pierre.
Pentstemon albidum, Nutt. Low with glabrous calyx. Hills around Fort Pierre.
Pentstemon cristatum, Nutt. On high prairies; Upper Missouri.
Pentstemon gracile, Nutt. Prairie bottoms, near Fort Pierre.
Pentstemon pubescens, Solander. Fort Pierre; June.
Pentstemon levigatus, Solander. Fort Leavenworth; May.
Pentstemon acuminatus, Lindl. Sandhills on Loup fork.
Pentstemon Fendleri, Gray. Sandhills on Loup fork.
Pentstemon confertus, Lindl. Laramie mountains, August 24th.
Pentstemon ——? undetermined. Niobrara.
Mimulus ringens, Linn. Council bluffs and Big Sioux.
Mimulus Jamesii, Torr. On the Platte. Dr. Cooper.
Gratiola Virginica, Linn. Quite common along the Missouri.
Veronica anagallis, Linn. Common; Council bluffs.
Veronica scutellata, Linn. With the preceding.
Veronica peregrina, Linn. Fort Pierre.
Veronica Americana, Schwein. Niobrara river.
Veronica arvensis, Linn. Council bluffs to Bad Lands.
Ilysanthes gratioloides, Benth. Yellowstone country.
Limosella aquatica, Linn. Wet places on the banks of the Yellowstone. This is the same as the European plant.
Synthyris Houghtoniana, Benth. Black hills.
Gerardia purpurea, Linn. Council bluffs.
Gerardia tenuifolia, Vahl. Fort Pierre.
Castilleia sessiliflora, Pursh. Fort Pierre, Bad Lands, Yellowstone, &c.
Castilleia septentrionalis, Lindl. Black hills.
Castilleia linariafolia, Benth. Laramie mountains, August 24th.
Castilleia argutifolia, Nutt. Laramie mountains.
Melampyrum Americanum, Michx. Extends up the Missouri as far as the mouth of the Platte.
Pedicularis lanceolata, Michx. Fort Pierre, Yellowstone, &c.
Orthocarpus luteus. Near Powder river on Yellowstone.

ACANTHACEÆ.

Dipteracanthus strepens, Nees. Fort Leavenworth to mouth of Niobrara river.
Dianthera Americana, Linn. Platte valley.

VERBENACEÆ.

Verbena urticifolia, Linn. Dixon's bluffs, on Missouri.

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Verbena bipinnatifida, Nutt. Bad Lands and Yellowstone river. Some forms of *Verbena* were found near the mouth of Kansas river, and at Sargent's bluffs, which are evidently hybrids, probably between *V. urticifolia* and *V. bracteosa*. Numerous hybrids between the species of *Verbena* are not rare in the vicinity of St. Louis, which I have noticed in Silliman's Journal, Jan. 1844, page 99.

Verbena bracteosa, Michx. A very common plant about prairie dog villages on the Upper Missouri.

Verbena hastata, Linn. Platte valley.

Verbena stricta, Vent. Platte valley; July.

Verbena Aubletia, Linn. Along the Missouri in Kansas.

Lippia lanceolata, Michx. Fort Leavenworth, Kansas Territory.

Phryma Leptostachya, Linn. Not rare along the Missouri to latitude 43°.

LABIATÆ.

Teucrium Canadense, Linn. Bad Lands, &c.

Mentha Canadensis, Linn. All along the Missouri to the Yellowstone.

Mentha borealis, var. *glabrata*. Loup fork, July 6th.

Lycopus sinuatus, Ell., Benth. Council bluffs to above Fort Pierre. Some forms are very deeply pinnatifid.

Lycopus obtusifolius, Michx., Benth. Common along the Yellowstone. Abundantly distinguished from the former by the larger flowers with included stamens. Sterile filaments reduced to mere warts and naked throat of corolla. The leaves are somewhat clasping with a sessile base, the lowest ones obtuse, but the upper ones acute and even acuminate, regularly serrate and on both sides abundantly glandulo-punctate.

Isanthus cœruleus, Michx. Fort Riley. Found by Dr. Cooper.

Pycnanthemum lanceolatum, Pursh. Loup fork, July 31st, 1857.

Hedeoma pulegioides, Pers. Bad Lands.

Hedeoma hispida, Pursh. Council bluffs to Bad Lands and Yellowstone. Leaves strongly ribbed on the lower side, scarcely punctate, longer than the verticils; teeth of punctiferous calyx spreading.

Hedeoma Drummondi, Benth. Sandy soil on the Yellowstone river, common. Similar to the preceding but perennial with a long tap root; leaves nerveless, strongly punctate on both sides, shorter than the verticils; teeth of fructiferous calyx connivent.

Salvia trichostemoides, Pursh. Fort Pierre, Bad Lands.

Salvia Pitcheri, Torr. Collected by Dr. Cooper near Fort Riley.

Monarda Bradburiana, Beck. Fort Pierre.

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Monarda fistulosa, Linn. The form usually named *M. allophylla*, Fort Pierre and Bad Lands to Yellowstone.

Monarda aristata, Nutt. Sandhills on Loup fork, August 1st.

Blephilia ciliata, Raf. Bad Lands.

Lophanthus nepetoides, Benth. Council bluffs.

Lophanthus scrophulariaefolius, Benth. Bad Lands.

Lophanthus anisatus, Benth. Yellowstone.

Physostegia Virginiana, Benth. Fort Pierre.

Scutellaria parvula, Michx. Fort Pierre.

Scutellaria galericulata, Linn. Fort Berthold to Fort Union, a smooth and a pubescent form.

Brunella vulgaris, Linn. Loup fork, July 30th.

Brunella officinalis, Linn. Loup fork, July 30th.

Marrubium vulgare, Linn. Council bluffs, &c.

Stachys palustris, Linn. Bad Lands, Yellowstone.

BORAGINACEÆ.

Onosmodium Virginianum, D. C. Prairies from Bellevue to Fort Pierre.

Onosmodium hispidum, Michx. Prairies around Teton river, near Fort Pierre.

Onosmodium molle, Michx. Loup fork, July 24th.

Lithospermum breviflorum, Engl. & Gray. (Plant. Linheim.) Fort Pierre, Bad Lands, Yellowstone. Flowers smaller than in the original Texan specimens, only about one line long; style shorter than corolla; no trace of scales, nuts large, shining, impressed, punctate only on the ventral side. Some forms are decumbent, others erect; these latter resemble in fruit very closely *Lithospermum longiflorum*, which may be distinguished by the more canescent pubescence. The somewhat larger calyx, the rather less turgid nuts, and especially where it has not fallen off, the very long style. Is this plant really distinguishable from *L. angustifolium?*

Lithospermum breviflorum, var. *punctulosum*, Engelmann. Hispidum, caulibus e radice perpendiculari pluribus, erectis foliis linearibus; floribus pseudo-axillaribus minutis; nucibus minoribus undique exsculpto punctulosis. Sandy bottoms about Fort Union at the mouth of the Yellowstone river. The flowers are absolutely identical with those of the last, otherwise the much greater roughness and the curiously punctate nuts would seem to indicate specific difference.

Lithospermum hirtum, Lehm. Council bluffs.

Lithospermum canescens, Lehm. Same place.

Lithospermum longiflorum, Spreng. Council bluffs to Bad Lands.

Lithospermum Mandanense, Nutt. Mouth of Big Sioux river, in May.

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Lithospermum angustifolium, Michx. Near mouth of Powder river on Yellowstone.

Mertensia lanceolata, D. C. White river and Bad Lands to Fort Pierre.

Myosotis verna, Nutt. Bad Lands and Fort Pierre.

Echinospermum Lappula, Lehm. Fort Pierre.

Echinospermum patulum, Lehm. From Niobrara and White river to Bad Lands, Fort Pierre, and Yellowstone. More abundant than the last.

Echinospermum strictum, Nees. Fort Pierre.

Eritrichium glomeratum, D. C. Fort Pierre, Bad Lands to the Yellowstone. The young specimens from White river are white canescent, the old ones from Fort Union are very rough and green; the seeds are more or less tubercled, style persistent, much thickened below.

Eritrichium floro-cinereum, Torr. (ined. Fendler plants.) On Platte river near Fort Laramie.

Eritrichium micranthum, Torr. (Fendler, 635.) Niobrara river, August 16th.

Eritrichium suffruticosum, Torr. Fort Laramie, August 13th.

Cynoglossum Morrisoni, D. C. Fort Pierre and White river.

HYDROPHYLLACEÆ.

Hydrophyllum Virginicum, Linn. Council bluffs and higher up on the Shady river banks.

Hydrophyllum appendiculatum, Michx. Fort Pierre.

Hydrophyllum macrophyllum, Nutt. Shady woods as high up the Missouri as mouth of White river, and in White river valley. Most abundant in the carboniferous limestone regions of Council bluffs, April.

Ellisia ambigua, Nutt. Prairies and woods from Fort Leavenworth to the Yellowstone. The larger specimens, have the flowers frequently in naked racemes.

Ellisia Nyctelea, Linn. About old houses and gardens to Big Sioux, and along old roads in prairie dog villages on the Upper Missouri.

Phacelia circinata, Jacq. In Kansas; Dr. Cooper.

POLEMONIACEÆ.

Phlox reptans, Linn. Above Council bluffs.

Phlox pilosa, Linn. Above Council bluffs.

Phlox Hoodii, Hook. Fort Union to Bad Lands.

Phlox divaricata, Linn. Council bluffs and Platte valley.

Collomia linearis, Nutt. Common about Fort Pierre; Fort Union.

Gilia longiflora, Torr. In sandhills of Niobrara river.

Gilia congesta, Hook. White river to Yellowstone.

CONVOLVULACEÆ.

Calystegia sepium, R. Br. Council bluffs to Yellowstone, Loup fork.

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Calystegia spithamaea, Pursh. Council bluffs to Fort Pierre.

Convolvulus argentea, Pursh. Bad Lands, Fort Union, and Yellowstone.

Ipomea leptophylla, Torr. I have seen this plant in but one locality along the Missouri; Bear creek near "Bad Lands." But in the sandhills on Loup fork, along the Niobrara, and around Fort Laramie, it is very abundant.

Cuscuta glomerata, Choisy. Abundant on sandy bottoms of Missouri.

Cuscuta Gronovii, Willd. Woodlands on Missouri.

Cuscuta decora, Choisy. Bottoms of Missouri.

SOLANACEÆ.

Solanum heterandrum, Pursh. Fort Pierre to Yellowstone.

Solanum nigrum, Michx. Not rare on the sandy bottoms of Missouri.

Solanum triflorum, Nutt. Very abundant in prairie dog villages on Upper Missouri.

Solanum Carolinense, Linn. Along Missouri to Council bluffs.

Physalis lanceolata, Michx. Sandy bottoms of Missouri to Fort Pierre.

Physalis viscosa, Linn. Sandy bottoms of Missouri to mountains.

Androcera lobata, Nutt. Very abundant about old trading houses, along old roads, and in prairie dog villages on Upper Missouri.

Datura stramonium, Linn. Introduced as high up the Missouri as Council bluffs.

GENTIANACEÆ.

Gentiana alba, Muhl. Fort Union.

Gentiana affinis, Griesb. Black hills, Sept. 21st.

Eustoma Russelianum, G. Don. Around saline lakes in the sandhills of Loup fork and Niobrara. Very abundant. August.

APOCYNACEÆ.

Apocynum cannabinum, Linn. Abundant on low bottoms of Missouri to mountains.

Apocynum androsæmifolium, Linn. Black hills, September 4th.

ASCLEPIADACEÆ.

Asclepias macranthera, Torr. Not rare on the moist prairies of the Upper Missouri, Loup fork, and Platte valley; July 16th.

Asclepias incarnata, Linn. Moist places on the Loup fork and Platte.

Asclepias speciosa, Torr. Fort Pierre, &c.

Asclepias purpurascens, Linn. Council bluffs.

Asclepias pubescens. Forts Pierre and Clark.

Asclepias Meadi, Torr. Loup fork, sandhills.

Asclepias tuberosa, Linn. Mouth of Big Sioux, and in Platte valley.

Asclepias verticillata, Linn. Abundant on prairies, Fort Pierre.

Anantherix viridis, Nutt. Platte valley, Loup fork, July 16th.

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Acerates longifolia, Nutt. Common around Fort Pierre.

Acerates angustifolia, Nutt. With preceding.

Acerates viridiflora, Ell. Dwarfed. Loup fork, July 27th.

OLEACEÆ.

Fraxinus Americana, Linn. Generally diffused throughout the Northwest.

ARISTOLOCHIACEÆ.

Asarum Canadense, Linn. Near Council bluffs.

NYCTAGINACEÆ.

Oxybaphus nyctagineus, Sweet. Fort Pierre, &c.

Oxybaphus floribundus, Choisy. Fort Clark.

Oxybaphus hirsutus, Sweet. Yellowstone.

Oxybaphus angustifolius, Sweet, and var. *decumbens*. Fort Pierre to Yellowstone.

Abronia fragrans, Nutt. Yellowstone.

Abronia cycloptera, Gray. Yellowstone.

CHENOPODIACEÆ.

Chenopodium album, Linn. Common all along the Missouri.

Chenopodium glaucum, Linn. Along the Yellowstone.

Chenopodium ambrosioides, Linn. Mouth of Milk river.

Chenopodium urbicum, Linn. Big Muddy, Fort Union.

Atriplex hastata, Linn. Little Rocky Mountain creek.

Cycloloma platyphyllum, Moquin. Laramie mountains, August 24th.

Monolepis Nuttalliana, Moquin. Fort Union.

Monolepis chenopodioides, Moquin. Below Fort Pierre, along Missouri and Yellowstone to Fort Sarpy.

Obione speciosa, Moquin. Bad Lands to Yellowstone.

Obione canescens, Moquin. Throughout the Missouri and Yellowstone region.

Obione argentea, Moquin. Abundant on arid hills near mouth of Yellowstone.

Obione Suckleyana, Torr (in Stevens's Report, P. R. Surveys, in ed. fig. 3), Fort Union

Eurotia lanata, Moq. Bad Lands to Yellowstone, Fort Laramie.

Kochia dioica, Nutt. Fort Pierre to Yellowstone.

Corispermum hyssopifolium, Linn. Yellowstone; hairy variety on sandbars along Missouri, Fort Union, August 15th.

Suæda furticosa, Forsh. Saline places on Yellowstone.

Suæda maritima, Dumort. Milk river.

Chenopodina depressa, Moq. Saline places, Yellowstone.

Salicornia herbacea, Linn. Saline places, Fort Union.

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Sarcobatus vermicularis, Nees. This is one of the most abundant shrubs on the Upper Missouri. It makes its first appearance near latitude 44°, and seems to thrive best in the saline clays of the Cretaceous and Tertiary formations. It is sometimes called "grease-wood" by the traders, and is often used for fuel by them on the Yellowstone river, where it grows to the height of ten or twelve feet, with trunks two to three inches in diameter. On the Yellowstone and along the Missouri, it sometimes covers many square miles to the exclusion of other plants.

Schoberia calceoliformis, Moq. Yellowstone.

AMARANTHACEÆ.

Montelia tamariscina, Gray. Sandhills on Loup fork.

Amaranthus albus, Linn. Sandy bottoms and shores of Missouri.

Amaranthus retroflexus? Linn. Bad lands.

Amaranthus hybridus. Fort Union.

Amaranthus blitum. Fort Union.

Frœlichia Floridana, Moq. Sandhills.

POLYGONACEÆ.

Rumex altissimus, Wood. All along the Missouri to Bad Lands.

Rumex maritimus, Linn. Along Missouri and Yellowstone.

Rumex persicarioides, Linn. Sandy bottoms of Missouri.

Rumex venosus, Pursh. Old Ponca village, Loup fork.

Polygonum amphibium, Linn. Low wet places along the Missouri.

Polygonum aviculare, Linn. Council bluffs, along the Missouri.

Polygonum tenue, Michx. Council bluffs to mountains.

Polygonum orientale, Linn. Council bluffs.

Polygonum Pennsylvanicum, Linn. Bad Lands.

Polygonum persicaria, Linn. Fort Sarpy on the Yellowstone.

Polygonum ramosissimum, Michx. Bad Lands.

Polygonum dumetorum, Linn. Council bluffs.

Polygonum convolvulus, Linn. Black hills.

Polygonum nodosum. Chardon's creek in Blackfoot country.

Eriogonum annuum, Nutt. Yellowstone and Bad Lands.

Eriogonum flavum, Nutt. Bad Lands to Yellowstone.

Eriogonum gnaphaloides, Benth. On arid hills, Fort Union, and Bad Lands.

Eriogonum alatum, Torr. Fort Laramie.

Eriogonum aureum. Shyenne river.

Eriogonum umbellatum, Torr. Laramie mountains.

Eriogonum effusum, Nutt. Platte valley.

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Eriogonum Jamesii, Benth. Sandhills.

Eriogonum rotundifolium, Benth. Bad Lands of the Judith.

Eriogonum brevicaule, var. *lyptophyllum*, Torr. Laramie mountains.

Oxyria digyna, Campd. Black hills.

LAURACEÆ.

Benzoin odoriferum, Nees. Woody bottoms along Missouri, below Niobrara.

ELAEAGNACEÆ.

Shepherdia argentea, Nutt. Very abundant from mouth of Big Sioux river to the mountains. It bears a profusion of red, acid fruit, called buffalo berries.

Eleagnus argentea, Pursh. I have seen this shrub in but one locality in Missouri, near Fort Clark, on the high Tertiary hills.

SANTALACEÆ.

Comandra umbellata, Nutt. Fort Pierre and on the Yellowstone.

EUPHORBIACEÆ.

Euphorbia corollata, Linn. Quite common on Missouri to latitude 45°.

Euphorbia marginata, Pursh. Very abundant to mountains.

Euphorbia maculata, Linn. Same as last.

Euphorbia polygonifolia, Linn. Along old roads, Upper Missouri.

Euphorbia dictyosperma, Fisch & Moq. Fort Pierre.

Euphorbia glyptosperma, Engel. Common all over Western plains.

Euphorbia inæquilatera, Souder in Linnea. With the last.

Euphorbia Geyeri, Engel. Near mouth of Powder river, on Yellowstone.

Euphorbia hypericifolia, Linn. Sandhills on Loup fork, also along Missouri.

Euphorbia hexagona, Nutt. Sandhills of Loup fork, Niobrara. Abundant.

Croton muricatum, Nutt. Sandhills.

URTICACEÆ.

Ulmus fulva, Michx. Abundant on the rich bottoms of Missouri to Big Sioux, and ceases to appear at the mouth of Niobrara river.

Ulmus Americana, Linn. Along rivers and streams to mountains.

Celtis occidentalis, Linn. Abundant near to Niobrara river.

Morus rubra, Linn. Very abundant to mouth of Big Sioux; seen sparingly, and of small growth to the mountains.

Urtica gracilis, Ait. Thickets and streams to Niobrara.

Urtica Canadensis, Linn. Same as preceding.

Parietaria Pennsylvanica, Muhl. Missouri and Yellowstone.

Humulus Lupulus, Linn. Most abundant in the Upper Missouri country.

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PLATANACEÆ.

Platanus occidentalis, Linn. Abundant on the rich bottoms of Missouri and Kansas; but ceases to appear about one hundred miles above Council bluffs.

JUGLANDACEÆ.

Juglans cinera, Linn. Big Sioux.

Juglans nigra, Linn. Does not extend above latitude 43°.

CUPULIFERÆ.

Quercus tinctoria, Bartram. Council bluffs and Big Sioux.

Quercus rubra, Linn. With preceding.

Quercus macrocarpa, Michx. Extends to mountains.

Quercus obtusiloba, Michx. Bad lands.

Corylus Americana, Walt. Abundant around Council bluffs.

BETULACEÆ.

Betula glandulosa, Michx. Laramie mountains, August 26th.

Alnus ——— *?* Black hills.

SALICACEÆ.

Salix longifolia, Muhl. In different forms along Missouri and Yellowstone.

Salix nigra, Marshall. Council bluffs.

Salix ——— *?* Fort Pierre.

Salix ——— *?* Forks of White river.

Salix ——— *?* Fort Pierre, June 18th.

Salix ——— *?* Medicine creek.

Populus tremuloides, Michx. Black hills.

Populus monilifera, Ait. A large tree, constituting by far the greater portion of the timber along the valley of the Missouri.

Populus ———. Called in the West "bitter Cottonwood." Makes its first appearance near Fort Laramie. Have never observed it along the Missouri. A few small trees observed near the head of the Shyenne, at the base of Bear Peak.

CONIFERÆ.

Pinus Engelmanni, Torr. On the Yellowstone.

Pinus ponderosa, Douglass. Black hills.

Abies Douglassi. Bad lands of the Judith.

Juniperus Virginiana, Linn. Along Missouri to mountains.

Juniperus communis, Linn. Fort Union.

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LIST OF NEBRASKA CARICES.

BY PROF. CHESTER DEWEY.

C. vulpina, Linn. A well-known European species, first found in Ohio in our country some years since, abounds in Nebraska of large size: cannot be confounded with C. stipata, above Fort Pierre.

C. vulpinoidea, Michx.

C. multiflora, Michx. Fort Pierre.

C. stipata, Muhl. Little Sioux River.

C. rosea, Schk. Southern Nebraska.

var. *radiata*, Dew. Southern Nebraska.

C. setacea, Dew. Southern Nebraska.

C. teretiuscula, Good. Southern Nebraska.

C. Muhlenbergi, Schk. Missouri, below Fort Pierre.

C. cephaloidea, Dew. Near Fort Leavenworth.

C. Hookeriana, Dew. Missouri, below Fort Pierre.

C. stenophylla, Wahl. Upper Missouri. Well known in the Tyrol; found also in the Rocky Mountains, and in Nebraska, Dr. Hayden. First published as American also by Dr. Boott.

C. Douglasi, Boott. West of Fort Pierre. From N. W. Coast and Rocky Mountains, first described by Dr. Boott; since found so far south, like *C. Richardsoni* in its wide diffusion.

C. Nuttalli, Dew. Yellowstone river. This species, found by Mr. Nuttall in his botanic explorations on the Rocky Mountains, had escaped my memory, and I gave to the specimens from Nebraska the name of my young friend, Mr. Meek, in Silliman's Journal. Its spikes are closely aggregated into a head; its fruit small, ovate and short-lanceolate, and much shorter and narrower than the broad long-lanceolate scale; culm 3 to 4 inches high, with almost setaceous leaves. These characters separate it from the next preceding species.

C. marcida, Boott. Abundant over Southern Nebraska.

C. cristata, Schw. Little Sioux river.

C. straminea, Willd. Above Fort Pierre.

var. *minor*, Dew. Above Fort Pierre.

C. scirpoides, Schk. Near Fort Leavenworth.

C. mirabilis, Dew. Common.

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C. fistucacea, Schk. Missouri, below Fort Pierre.

C. scoparia, Schk. Common over East Nebraska.

C. tenera, Dew. Missouri, below Fort Pierre.

C. leporina, Linn. Credited before to the Arctic Regions, and not very common.

C. petasata, Dew. Upper Missouri, collected first in Arctic America, and is abundant in Nebraska.

C. festiva? Dew. (Too old to decide.) Near Fort Leavenworth.

C. curta, Good. Yellowstone river.

C. obtusata, Lily. Long known in Europe, and found on the Rocky Mountains and in Nebraska.

C. grisea, Walk.

C. laxiflora, Schk. Fort Leavenworth.

C. arctata, Boott. Missouri, near Fort Pierre.

C. Meadi, Dew. In Michigan, and now in Nebraska.

C. eburnea, Boott. Missouri river.

C. Crawei, Dew. Missouri river.

C. Steudeli, Kunth. Missouri river. First found in Ohio.

C. Davisi, Torrey. Yellowstone river.

C. Shortiana, Dew. Kentucky, and in Nebraska.

C. marginata, Muh. Missouri, near Fort Pierre, as figured by Schk.

C. hystricina, Willd. Eagle-nest creek.

C. laxiflora, Lam., not of Schk. *C. anceps*, Schk., and of American authors for years. Near Fort Clark.

C. blanda, Dew. *C. conoidea*, Muh. Near Fort Clark.

C. aristata R., Br. Abundant at the "Bad Lands."

var., *longo-lanceolata*, Dew. The scale as long as and often longer than the fruit, narrow. "Bad Lands."

C. lanuginosa, Michx. On the Yellowstone.

C. riparia, Good. Along the Missouri.

C. vesicaria, Linn. Along the Missouri.

C. lacustris, Willd. Common on the Weters.

C. longirostris, Tor. Along the Missouri.

C. piliformis, Good. Eagle-nest creek.

C. ampullacea, Good. Along the Missouri.

C. monile, Tuckerman. Along the Missouri.

C. utriculata, Boott. Abundant along streams.

C. trichocarpa, Muh. Along the Missouri.

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C. lævi-conica, Dew. Along Big Sioux. Staminate spikes 2 or 3, cylindric and slender; pistillate spikes 2, sometimes 3, cylindric, erect, oblong, subdensi-flowered, leafy-bracteate, the lowest short pedunculate and vaginate; stigmas three; fruit long-conic, slender and tapering, scarcely inflated at base, bifurcate, and oblique at the orifice, smooth and obsoletely striate, as long or a little longer than the ovate and lanceolate scale; culm tall and slender. (American Journal of Science, Vol. XXIV, p. 47, Second Series.) The smooth and slender conic fruit and scale remove this plant from *C. trichocarpa*.

C. acuta, Linn. Eagle-nest creek.

C. vulgaris? Fries. Eagle-nest creek.

C. stricta, Lam. Eagle-nest creek.

C. strior, Dew. Eagle-nest creek.

C. recta, Boott. Near Fort Pierre. Discovered by the English Exploring Expedition in Arctic America, and described by Dr. Boott.

C. Nebraskenis, Dew. Near Fort Pierre. Staminate spikes two, oblong and near, the lower small and sessile; pistillate spikes two to four, oblong, short-cylindric, densely flowered, the upper often staminate at their apex and sessile, the lower short-pedunculate, all with leafy bracts; fruit with two stigmas, convex, obovate or elliptic, short-pointed above, and tapering at the base, a little shorter than ovate and acute, or lanceolate scale; stem about a foot and a half high, sharp-triquetrous edges, and smooth, leafy towards the base. (American Journal, Vol. XVIII, p. 102, Second Series.)

C. Haydenii, Dew. Near Fort Pierre, and at Eagle-nest creek. Staminate spike single, sometimes two, cylindric, the lower sessile, and sometimes with flowers at the base; pistillate spikes three to five, long-cylindric, erect, graceful or slender, 2 to 3 inches long; base flowered, especially at the lower part of the spikes, one or more staminate at the apex, sessile except the lowest; fruit, *distigmatic*, elliptic, convex, short-beaked, and entire at the orifice, about half the length of the scale, which is lanceolate, black, white line on the back, culm 2 to 3 feet high, rather slender, leafy at the base.*

* When Sprengel printed his Systema Vegetabilium, Vol. III, in 1826, it contained 267 species of Carex, all the Reed-grasses or sedges then known to him,—a very host of species of one genus. Since that time the number has increased to 800 or more. Perhaps 350 of these have been found in North America, and about 250, to speak in general terms, have been found in the United States, east of the Mississippi. The above Catalogue contains more than 50 species, collected in Nebraska Territory, most of which are spread over a wide extent of our country, so prolific in vegetable life. C. D.

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NOTE.

The foregoing Report was written, for the most part, over three years since, and contains a condensed statement of the geological information concerning the Upper Missouri which had been secured up to that time. It may be regarded as a report of progress, and will be followed by the more complete and more matured results of the Expedition of 1859 and '60, under Capt. Wm. F. Raynolds, which are now in an advanced stage of preparation. The cost of publication has rendered it necessary to omit the illustrative sections, and many other details, which would have added materially to the value of the work.

A detailed account of the geology of the White River group, Loup River beds, and the Judith River deposits, has been omitted, on account of the intention of the author to visit those localities again at no distant day, and to make a thorough exploration of them.

The Map accompanying the memoir is reduced from the military map of Nebraska and Dakota, by Lieut. G. K. Warren, T. E. Many of the details of the topography have been omitted.

It remains now for the author to acknowledge his indebtedness to several gentlemen who have aided him during the progress of the Report. To Lieut. G. K. Warren, under whose direction, as commander of the Expeditions, the greater portion of the information was obtained, the writer is indebted for every facility and assistance that could be afforded, consistent with the public service. The memoir itself bears ample evidence of the kind aid and counsel, ever freely given, by my friend and associate, Mr. F. B. Meek. Messrs. Baird, Cope, Gill, Lea, and Binney revised the Catalogues in their respective departments. Dr. Engelmann and Prof. Dewey prepared the Catalogue of Plants. Dr. J. S. Newberry furnished some valuable information for the Map in regard to Southern Kansas.

To the Smithsonian Institution, and to its distinguished Secretary, Prof. Henry, the writer, during all his investigations in regard to the geology and natural history of the Upper Missouri, is indebted for the use of rooms, books, and every facility essential to the successful prosecution of his labors.

F. V. Hayden

ERRATA.

Page 14, last line of second paragraph, for "*Meycochœrus*" read, "*Merychochœrus*."

Page 16, fourth line from bottom, for "La Pule" read "La Prele."

Page 18, fifth line from top, for "above" read "preceding."

Page 36, sixth line from top, for "Juya-kara Peak" read "Inya-kara Peak."

Page 68, second line from bottom, for "will" read "shall."

Page 69, for "*Ammonites alpinianus*" read "*Ammonites Galpinianus*."

Page 94, for "*Corbula matriformis*" read "*Corbula mactriformis*."

Page 116, first line of second paragraph, for "appears" read "appear."

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